



**BUILDING MATERIALS FROM NEEDLE-PUNCHED FIBER MATS  
WITH GRANULAR HEAT-ACTIVATED ADHESIVES**

**ABSTRACT**

Dry adhesives are embedded within needle-punched fiber mats used for manufacturing wood-like building materials. During a cross-lapping operation that lays large ribbons of combed fibers (such as nylon fibers from shredded carpets) on top of a large moving conveyor, one or more layers of granular, pellet, fibrous, film, or other dry adhesive are embedded within the loose mass of fibers. For example, dimpled rollers, shaker trays, or similar devices loaded with granular or pelleted adhesives can be positioned above the conveyor, between cross-lapper machines. The fiber mass with embedded adhesive is then needle-punched into a stable, compact, flexible form that can be stored and shipped. When desired, the mats are run through a heated press that melts the adhesive, converting it into a binder that turns the mats into stiff sheets of material comparable to plywood.